WHAT IS CLAIMED IS:

1. A method of producing a real-time video stream from stored MPEG encoded video clips, the MPEG encoded video clips being contained in data storage of a video server, the method comprising:

reading segments of the MPEG encoded video clips from the data storage, the segments of the MPEG encoded video clips being decoded by respective first and second decoders in a decoder pair, the first decoder decoding at least a portion of a first MPEG encoded video clip and the second decoder decoding at least a portion of a second MPEG encoded video clip, the real-time video stream being obtained by operating a video switch to switch between a video output of the first decoder and a video output of the second decoder to select a specified In-point frame in the second MPEG encoded video clip that is selectable as any MPEG frame type at any location in an MPEG group of pictures (GOP) structure.

2. The method as claimed in claim 1, which includes operating the decoders and the video switch in response to control commands from the video server.

3. The method as claimed in claim 2, wherein the control commands include streaming commands used to control the In-point of the second MPEG encoded video clip included in the real-time video stream.

4. The method as claimed in claim 2, wherein the control commands include configuration commands used by the video server for determining a configuration of the decoders and to set up configuration parameters for the decoders.

5. The method as claimed in claim 2, which further includes transmitting asynchronous edit requests between the video server and the decoders.

6. The method as claimed in claim 2, which further includes transmitting asynchronous status reports between the decoders and the video server.

7. The method as claimed in claim 1, which includes the decoders requesting and obtaining MPEG encoded data from the video server.

8. The method as claimed in claim 1, wherein the video server maintains decoder data buffers of the decoders in a substantially full condition.

9. The method as claimed in claim 1, wherein the decoders detect loss of data during transmission from the video server to the decoder array.

10. The method as claimed in claim 1, wherein the video switch is operated to switch between a video output of the first decoder and a video output of the second decoder to a specified In-point frame in the second MPEG encoded video clip to switch between a video output of the first decoder and a video output of the second decoder to

select a specified In-point frame in the second MPEG encoded video clip at the occurrence of a specified time code.

11. The method as claimed in claim 1, wherein each decoder obtains MPEG encoded data from the video server by sending a request for data including a decoder data buffer free space value and an offset value indicating any MPEG encoded data previously received from the video server, and the video server responds to the request for data by sending MPEG encoded data sufficient to substantially fill the data buffer free space taking into consideration MPEG encoded data previously sent but not yet received by said each decoder when said each decoder sent the request for data.

12. The method as claimed in claim 1, wherein each decoder receives MPEG encoded data from the video server by receiving data packets, each of the data packets including a respective offset value indicating an amount of data transmitted in at least one previous data packet to said each decoder, and said each decoder computes an expected offset value from the offset value in a received data packet and compares the expected offset value to an offset value in a subsequently received data packet to recognize that at least one data packet has been lost in transmission from the video server to said each decoder.

13. The method as claimed in claim 1, which includes the video server preparing for the switching from the video output from the first decoder to the video output from the second decoder by fetching MPEG encoded data of the second MPEG

encoded video clip from disk storage to buffer memory in the video server, and later initiating a stream of MPEG encoded data to the second decoder in response to a request from the second decoder.

14. The method as claimed in claim 1, which includes the video server preparing for the switching from the video output from the first decoder to the video output from the second decoder by initiating a stream of MPEG encoded data from the second MPEG encoded video clip in the video server, and wherein the decoders have sufficient buffer memory so that streaming of MPEG encoded data of the first MPEG encoded video clip from the video server to the first decoder is not overlapped with streaming of MPEG encoded data of the second MPEG encoded video clip from the video server to the second decoder.

15. The method as claimed in claim 1, which includes the video server preparing for the switching from the video output from the first decoder to the video output from the second decoder by initiating a stream of MPEG encoded data from the second MPEG encoded video clip in the video server, and wherein the video server fetches MPEG encoded data from storage of the video server beginning with an I frame referenced by the In-point frame and preceding the In-point frame in decode order when the specified In-point frame is not an I-frame.

16. The method as claimed in claim 1, which includes synchronizing the video server and the decoders to a common house clock signal and switching between a video

output of the first decoder and a video output of the second decoder to a specified In-point frame in the second MPEG encoded video clip at the occurrence of a specified time code in the house clock signal.

17. A method of producing a real-time video stream from stored MPEG-2 encoded video clips, the MPEG-2 encoded video clips being contained in data storage of a video server, the method comprising:

reading segments of the MPEG-2 encoded video clips from the data storage, the segments of the MPEG-2 encoded video clips being decoding by respective first and second decoders in a decoder pair, the first decoder decoding at least a portion of a first MPEG-2 encoded video clip and the second decoder decoding at least a portion of a second MPEG-2 encoded video clip, the real-time video stream being obtained by operating a video switch to switch between a video output of the first decoder and a video output of the second decoder at an occurrence of a specified time code to select a specified In-point frame in the second MPEG-2 encoded video clip that is selectable as any MPEG-2 frame type at any location in an MPEG-2 group of pictures (GOP) structure,

which includes operating the decoders and the video switch in response to control commands from the video server, the control commands include streaming commands used to control the In-point of the second MPEG-2 encoded video clip included in the real-time video stream, and

which includes the decoders requesting and obtaining MPEG-2 encoded data from the video server.

18. The method as claimed in claim 17, wherein the control commands include configuration commands used by the video server for determining a configuration of the decoders and to set up configuration parameters for the decoders.

19. The method as claimed in claim 17, which further includes transmitting asynchronous edit requests between the video server and the decoders, and transmitting asynchronous status reports between the decoders and the video server.

20. The method as claimed in claim 17, which includes each decoder obtaining MPEG-2 encoded data from the video server by sending a request for data including a decoder data buffer free space value and an offset value indicating MPEG-2 encoded data previously received from the video server, and the video server responds to the request for data by sending MPEG-2 encoded data sufficient to substantially fill the data buffer free space taking into consideration MPEG-2 encoded data previously sent but not yet received by said each decoder when said each decoder sent the request for data.

21. The method as claimed in claim 17, wherein each decoder receives MPEG-2 encoded data from the video server by receiving data packets, each of the data packets including a respective offset value indicating an amount of data transmitted in at

least one previous data packet to said each decoder, and said each decoder computes an expected offset value from the offset value in a received data packet and compares the expected offset value to an offset value in a subsequently received data packet to recognize that at least one data packet has been lost in transmission from the video server to said each decoder.

22. The method as claimed in claim 17, which includes the video server preparing for the switching from the video output from the first decoder to the video output from the second decoder by fetching MPEG-2 encoded data of the second MPEG-2 encoded video clip from disk storage to buffer memory in the video server, and later initiating a stream of MPEG-2 encoded data to the second decoder in response to a request from the second decoder.

23. The method as claimed in claim 17, which includes the video server preparing for the switching from the video output from the first decoder to the video output from the second decoder by initiating a stream of MPEG-2 encoded data from the second MPEG-2 encoded video clip in the video server, and wherein the decoders have sufficient buffer memory so that streaming of MPEG-2 encoded data from the video server to the first decoder is not overlapped with streaming of MPEG-2 encoded data from the video server to the second decoder.

24. The method as claimed in claim 17, which includes the video server preparing for the switching from the video output from the first decoder to the video

output from the second decoder by initiating a stream of MPEG-2 encoded data from the second MPEG-2 encoded video clip in the video server, and wherein the video server fetches MPEG-2 encoded data from storage of the video server beginning with an I frame referenced by the In-point frame and preceding the In-point frame in decode order when the specified In-point frame is not an I-frame.

25. The method as claimed in claim 17, which includes synchronizing the video server and the decoders to a common house clock signal.

26. A system for producing multiple concurrent real-time video streams from stored MPEG encoded video clips, said system comprising:

a video server including data storage containing the MPEG encoded video clips; and

at least one MPEG decoder array linked to the video server for receiving control commands and data from the video server, the decoder array including multiple decoder pairs, each decoder pair having a video switch for switching from a video output of one decoder in said each decoder pair to a video output of the other decoder of said each decoder pair at an occurrence of a specified time code, the video server and the decoder array being programmed for switching each video switch for selecting a specified In-point frame that is selectable as any MPEG frame type at any location in an MPEG group of pictures (GOP) structure,

wherein the video server and the decoder array are programmed for the video server to control the decoder array by sending control commands from the video server to the decoder array, and the video server and the decoder array are programmed for each decoder to request and obtain MPEG-encoded data from the video server.

27. The system as claimed in claim 26, which includes at least one respective dedicated data link between each decoder in the decoder array and the video server for transmission of MPEG encoded data from the video server to the decoder, and at least one dedicated data link between the video server and the decoder array for transmission of the control commands.

28. The system as claimed in claim 27, which further includes at least one additional dedicated data link between the video server and the decoder array for transmission of asynchronous status reports and edit requests.

29. The system as claimed in claim 26, wherein the control commands include configuration commands to allow the video server to determine a configuration of the decoder array and to set up configuration parameters, and streaming commands to control the In-points of the MPEG encoded video clips included in each of the multiple concurrent real-time video streams.

30. The system as claimed in claim 26, wherein the video server and the decoder array are further programmed for the video server to receive asynchronous status

reports of significant events from the decoder array; and for the video server to send edit commands to the decoder array for editing content of the multiple concurrent real-time video streams.

31. The system as claimed in claim 26, wherein the video server is programmed to maintain decoder data buffers of the decoders in a substantially full condition, and the decoders are programmed to detect loss of data during transmission from the video server to the decoder array.

32. The system as claimed in claim 26, wherein each decoder is programmed to obtain MPEG encoded data from video server by sending a request for data including a decoder data buffer free space value and an offset value indicating any MPEG encoded data previously received from the video server, and the video server is programmed to respond to the request by sending MPEG encoded data sufficient to substantially fill the data buffer free space taking into consideration MPEG encoded data previously sent but not yet received by said each decoder when said each decoder sent the request for data.

33. The system as claimed in claim 26, wherein each decoder is programmed to receive MPEG encoded data from the video server by receiving data packets each including a respective offset value indicating an amount of data transmitted in at least one previous data packet to said each decoder, and said each decoder is programmed to compute an expected offset value from the offset value in a received data packet and to compare the expected offset value to an offset value in a subsequently received data

packet to recognize that at least one data packet has been lost in transmission from the video server to said each decoder.

34. A system for producing multiple concurrent real-time video streams from MPEG encoded video clips, said system comprising:

a video server for storing the MPEG encoded video clips, and

at least one MPEG decoder array coupled to the video server for producing the multiple concurrent real-time video streams from the MPEG encoded video clips stored in the video server;

wherein the video server includes cached disk storage for storing the MPEG encoded video clips, multiple data mover computers coupled to the cached disk storage for streaming segments of the MPEG encoded video clips from the cached disk storage to the MPEG decoder array, and a controller server computer coupled to the data mover computers for controlling the data mover computers; and

wherein the decoder array includes a respective decoder pair and a respective video switch for each of the multiple concurrent real-time video streams, the video switch selecting a video output from either one of the decoders in the decoder pair for production of said each of the multiple concurrent real-time video streams by switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair, wherein the In-point frame is selectable as any frame and any frame type in a group of pictures (GOP) structure of the MPEG encoded video, and the decoders in the decoder pair are coupled to

a respective one of the data mover computers for receiving segments of the MPEG encoded video clips for the production of said each of the multiple concurrent real-time video streams.

35. The system as claimed in claim 34, wherein the decoder array includes a decoder controller coupled to the decoders and to the video switches for controlling the decoders and the video switches, the decoder controller being coupled to at least one of the data mover computers for receiving control commands for the production of the multiple concurrent real-time video streams.

36. The system as claimed in claim 35, wherein the control commands include configuration commands to allow the video server to determine a configuration of the decoder array and to set up configuration parameters, streaming commands to control the In-points of the MPEG encoded video clips included in each of the multiple concurrent real-time video streams, asynchronous status reports of significant events from the decoder array; and edit commands to allow the decoders in the decoder array to be controlled for editing content of the multiple concurrent real-time video streams.

37. The system as claimed in claim 34, further including an operator control station coupled to the controller server for transmitting a play list and edit commands from an operator to the controller server for controlling and editing content of the multiple concurrent video streams.

38. The system as claimed in claim 34, which further includes a house clock generator coupled to the data mover computers and the decoders for scheduling and switching to the specified In-point frames when the house clock generator provides respective specified time code values.

39. The system as claimed in claim 34, wherein the respective data mover computer for each decoder pair is programmed to prepare for switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair by fetching MPEG encoded data for the other of the decoders in the pair from the cached disk storage to buffer memory in the respective data mover computer in response to a request from the controller server, and later initiating a stream of MPEG encoded data to the other of the decoders in the decoder pair in response to a request from the other of the decoders in the decoder pair.

40. The system as claimed in claim 34, wherein the respective data mover computer for each decoder pair is programmed to prepare for switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair by initiating a stream of MPEG encoded data to the other of the decoders in the decoder pair, and wherein the decoders have sufficient buffer memory so that streaming of MPEG encoded data from the respective data mover computer to said one of the decoders in the decoder pair is not

overlapped with streaming of MPEG encoded data from the respective data mover computer to the other of the decoders in the decoder pair.

41. The system as claimed in claim 34, wherein the respective data mover computer for each decoder pair is programmed to prepare for switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair by initiating a stream of MPEG encoded data to the other of the decoders in the decoder pair, and wherein the respective data mover computer for said each decoder pair is programmed to fetch MPEG encoded data from storage beginning with any I frame referenced by the In-point frame and preceding the In-point frame in decode order when the specified In-point frame is not an I-frame.

42. The system as claimed in claim 34, wherein each decoder is programmed to obtain MPEG encoded data from the respective data mover computer by sending a request for data including a decoder data buffer free space value and an offset value indicating any MPEG encoded data previously received from the respective data mover computer, and the respective data mover computer is programmed to respond to the request by sending MPEG encoded data sufficient to substantially fill the data buffer free space taking into consideration MPEG encoded data previously sent but not yet received by said each decoder when said each decoder sent the request for data.

43. The system as claimed in claim 34, wherein each decoder is programmed to receive MPEG encoded data from the respective data mover computer by receiving data packets each including a respective offset value indicating an amount of data transmitted in at least one previous data packet to said each decoder, and said each decoder is programmed to compute an expected offset value from the offset value in a received data packet and to compare the expected offset value from an offset value in a subsequently received data packet to recognize that at least one data packet has been lost in transmission from the respective data mover computer to said each decoder.

44. The system as claimed in claim 34, which includes multiple decoder arrays, each of the multiple decoder arrays being coupled to a respective one of the data mover computers for producing multiple concurrent real-time video streams from MPEG encoded data streamed from said respective one of the data mover computers.

45. A system for producing multiple concurrent real-time video streams from MPEG-2 encoded video clips, said system comprising:

a video server for storing the MPEG-2 encoded video clips, and

at least one MPEG-2 decoder array coupled to the video server for producing the multiple concurrent real-time video streams from segments of the MPEG-2 encoded video clips stored in the video server;

an operator control station coupled to the video server for transmitting a play list and edit commands from an operator to the video server for controlling and editing content of the multiple concurrent real-time video streams; and

wherein the video server includes cached disk storage for storing the MPEG-2 encoded video clips, multiple data mover computers coupled to the cached disk storage for streaming the segments of the MPEG-2 encoded video clips from the cached disk storage to the MPEG-2 decoder array, and a controller server computer coupled to the data mover computers for controlling the data mover computers in response to the play list and edit commands from the operator control station; and

wherein the decoder array includes a respective decoder pair and a respective video switch for each of the multiple concurrent real-time video streams, the video switch selecting a video output from either one of the decoders in the decoder pair for production of said each of the multiple concurrent real-time video streams by switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair, wherein the In-point frame is selectable as any frame and any frame type in a group of pictures (GOP) structure of the MPEG-2 encoded video, the decoders in the decoder pair being coupled to a respective one of the data mover computers for receiving segments of the MPEG-2 encoded video clips for the production of said each of the multiple concurrent real-time video streams, and the decoder array further includes a decoder controller coupled to the decoders and the video switches for controlling the decoders and the video switches, the decoder controller being coupled to at least one of the data mover computers for receiving control commands for the production of the multiple concurrent real-time video streams, wherein the control commands include configuration commands to allow the video server to determine a configuration of the decoder array and to set up configuration parameters, streaming commands to control the In-points of the MPEG-2 video clips

included in each of the multiple concurrent real-time video streams, asynchronous status reports of significant events from the decoder array; and edit commands to allow the decoders in the decoder array to be controlled for editing content of the multiple concurrent real-time video streams; and

wherein the respective data mover computer for each decoder pair is programmed to prepare for switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair by initiating a stream of MPEG-2 encoded data from the respective data mover computer to the other of the decoders in the decoder pair in response to a request from the other of the decoders in the decoder pair; and

wherein the system further includes a house clock generator coupled to the video server and the MPEG-2 decoder array for switching to the specified In-point frames when the house clock generator provides respective specified time code values.

46. The system as claimed in claim 45, wherein the respective data mover computer for each decoder pair is also programmed to prepare for switching from the video output from one of the decoders in the decoder pair to a specified In-point frame in the video output from the other of the decoders in the decoder pair by fetching MPEG-2 encoded data for the other of the decoders in the pair from the cached disk storage to buffer memory in the respective data mover computer in response to a request from the controller server.

47. The system as claimed in claim 45, wherein the decoders have sufficient buffer memory so that and streaming of MPEG-2 encoded data from the respective data mover computer to said one of the decoders in the decoder pair is not overlapped with streaming of MPEG-2 encoded data from the respective data mover computer to the other of the decoders in the decoder pair.

48. The system as claimed in claim 45, wherein the respective data mover computer for said each decoder pair is programmed to begin fetching of the MPEG-2 encoded data from any I frame referenced by the In-point frame and preceding the In-point frame in decode order when the specified In-point frame is not an I-frame.

49. The system as claimed in claim 45, wherein each decoder is programmed to obtain MPEG-2 encoded data from the respective data mover computer by sending a request for data including a decoder data buffer free space value and an offset value indicating any MPEG-2 encoded data previously received from the respective data mover computer, and the respective data mover computer is programmed to respond to the request by sending MPEG-2 encoded data sufficient to substantially fill the data buffer free space taking into consideration MPEG-2 encoded data previously sent but not yet received by said each decoder when said each decoder sent the request for data.

50. The system as claimed in claim 45, wherein each decoder is programmed to receive MPEG-2 encoded data from the respective data mover computer by receiving data packets each including a respective offset value indicating an amount of data

transmitted in at least one previous data packet to said each decoder, and said each decoder is programmed to compute an expected offset value from the offset value in a received data packet and to compare the expected offset value from an offset value in a subsequently received data packet to recognize that at least one data packet has been lost in transmission from the respective data mover computer to said each decoder.

51. The system as claimed in claim 45, which includes multiple decoder arrays, each of the multiple decoder arrays being coupled to a respective one of the data mover computers for producing multiple concurrent real-time video streams from MPEG-2 encoded data streamed from said respective one of the data mover computers.